UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,885	12/30/2004	Makoto Kato	10407-123US(A4004MT-US1)	2746

570 7590 10/09/2007

AKIN GUMP STRAUSS HAUER & FELD L.L.P.
ONE COMMERCE SQUARE
2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103

EXAMINER	
BOR, HELENE CATHERINE	
ART UNIT	**PAPER NUMBER**
3768	

MAIL DATE	DELIVERY MODE
10/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,885	KATO ET AL.	
	Examiner	Art Unit	
	Helene Bor	3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 June 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/28/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The examiner recognizes the applicant's amendments to claims, 1 & 10. Under examination are the original and amended claims, 1-17.

Response to Arguments

1. Applicant's corrections, filed 06/28/2007, with respect to the drawings are accepted. All objections to the drawings are withdrawn.

2. Applicant's corrections, filed 06/28/2007, with respect to the specification are accepted. All objections to the specification are withdrawn.

3. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claim 1-6 & 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brock-Fisher'732 et al. (US Patent No. 6,398,732 B1), in view of Bonnefous'028 (US Patent No. 5,411,028) and further in view of Guracar'344 (US Patent No. 6,030,344).

Claim 1: Brock-Fisher'732 teaches ultrasonic diagnostic apparatus (Figure 4, Element 50 & Col. 3, Line 53). Brock-Fisher'732 teaches an ultrasonic probe driving section for driving an ultrasonic probe for transmitting an ultrasonic transmission wave to an object to be measured including a fluid portion in which fluid moves (Figure 4,

Element 55 & Col. 3, Line 53-55). Brock-Fisher'732 teaches a receiving section for amplifying (Figure 4, Element 58 & Col. 3, Line 63-65) an ultrasonic reflected wave obtained when the ultrasonic transmission wave reflects from the object to be measured and received by the ultrasonic probe (Figure 4, Element 55 & Col. 3, Line 61). Brock-Fisher'732 teaches a phase detecting section for phase-detecting the ultrasonic reflected wave (Figure 4, Element 70 & Col. 4, Line 21-26 & 38-42). Brock-Fisher'732 teaches a computing section (Figure 4, Element 64) and the phase-detected signal (Figure 4, Element 70 & Col. 4, Line 21-26 & 38-42). Brock-Fisher'732 fails to teach obtaining the velocities of the object to be measured at a plurality of measuring positions of the object to be measured and obtaining the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches obtaining velocities of the object to calculate deformation (Col. 1, Line 45 – Col. 2, Line 5) or elastic moduli (Col. 3, Line 47-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to perform various calculations and realize very useful representations (Col. 2, Line 15-17). Brock-Fisher'732 teaches a fluid determining section for determining a fluid portion in the object to be measured in accordance with the phase-detected signal (Col. 4, Line 38-48). Brock-Fisher'732 teaches an image data generating section for generating image data (Figure 4, Element 59 & 61 & Col. 5, Line 13-18). Brock-Fisher'732 fails to teach a two-dimensionally image- displaying the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches a two-dimensionally image- displaying the deformation amounts and/or elastic moduli of the object to be measured in a region

other than the fluid portion by using the information determined by the fluid determining section (Col. 4, Line 40 – Col. 5, Line 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to produce images for examination of the patient (Col. 4, Line 52-54). Brock-Fisher'732 and Bonnefous'028 don't specify the details of the measurement of blood in the radius direction. However, Guracar'344 teaches at least one micro-region [spatial location] from the velocities and in a radius direction of the blood vessel, the micro-region defined by a portion of the object to be measured between at least two of the measuring positions (Figure 14A; Figure 10; Col. 5, Line 45-46 & Col. 14, Line 43-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order to provide an efficient metho0d for processing and displaying various ultrasound data (Col. 2, Line 15-16).

Claim 2/1: Brock-Fisher'732 teaches the fluid determining section (Col. 4, Line 38-48) but fails to teach a Doppler method. Bonnefous'028 teaches the Doppler method (Col. 8, Line 26-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 for the advantage of enabling broader use of the results and insensitive to the dispersion of the ultrasonic wave frequency used (Col. 8, Line 26-33).

Claim 3/2/1: Brock-Fisher'732 teaches a filter section for dividing the phase-detected signal into a frequency component higher than a predetermined value [threshold value] and a frequency component equal to or lower than the predetermined

value [threshold value] and selectively inputting signals of the divided frequency components to the fluid determining section and the computing section (Figure 4, Element 64 & 70, Figure 5, Element 112 & Col. 5, Line 6-18).

Claim 4/2/1: Brock-Fisher'732 teaches the ultrasonic probe driving section generates a first driving pulse of the object to be measured (Figure 4, Element 55 & Col. 3, Line 53-55). Brock-Fisher'732 teaches a second driving pulse suited to determine a fluid portion (Col. 2, Line 18-22). Brock-Fisher'732 teaches a computing section with a signal obtained by phase-detecting (Figure 4, Element 64, Figure 4, Element 70 & Col. 4, Line 21-26 & 38-42). Brock-Fisher'732 fails to teach obtaining the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches obtaining the deformation (Col. 1, Line 45 – Col. 2, Line 5) or elastic moduli (Col. 3, Line 47-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to perform various calculations and realize very useful representations (Col. 2, Line 15-17). Brock-Fisher'732 teaches the fluid determining section (Figure 4, Element 70) determines the fluid portion in accordance with a signal obtained by phase-detecting an ultrasonic reflected wave obtained by the second driving pulse (Col. 2, Line 18-22 & Col. 4, Line 28-33). Brock-Fisher'732 fails to teach a second driving pulse by the Doppler method. However, Bonnefous'028 teaches a second driving pulse by the Doppler method (Col. 8, Line 26-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in

order to broaden the use of the results and for the insensitivity to the dispersion of the ultrasonic wave used (Col. 8, Line 26-33).

Claim 5/1 and 6/1: Brock-Fisher'732 teaches an image data generating section for generating image data (Figure 4, Element 59 & 61 & Col. 5, Line 13-18). Brock-Fisher'732 fails to teach a two-dimensionally image- displaying the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches a two-dimensionally image- displaying the deformation amounts and/or elastic moduli of the object to be measured in a region other than the fluid portion by using the information determined by the fluid determining section (Col. 4, Line 40 – Col. 5, Line 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to produce images for examination of the patient (Col. 4, Line 52-54). Although Brock-Fisher'732 and Bonnefous'028 do not cite using gradation display or chroma display by name, Brock-Fisher'732 and Bonnefous'028 do teach displays of functional equivalence (Brock-Fisher'732 Col. 4, Line 44-45 & 52-54 & Bonnefous'028 Figure 4, Element 61 & Col. 4, Line 45-48 & Col. 5, Line 13-18). Brock-Fisher'732 teaches a second image obtained by displaying the fluid portion with a predetermined color and displaying a region other than the fluid portion with colorless transparence (Col. 4, Line 45-48 & Col. 5, Line 13-18). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to provide a means for review by the user (Brock-Fisher'732, Col. 5, Line 18). Brock-Fisher'732 fails to teach showing the deformation amounts and/or elastic moduli at

positions. However, Bonnefous'028 teaches obtaining the deformation amounts (Col. 1, Line 45 – Col. 2, Line 5) and/or elastic moduli (Col. 3, Line 47-50) and forming a 2D image (Col. 4, Line 52). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to produce images for examination of the patient (Col. 4, Line 52-54).

Claim 9/1: Brock-Fisher'732 teaches a display section for displaying an image (Figure 4, Element 61) in accordance with image data output from the image data generating section (Figure 4, Element 61).

1. Claim 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brock-Fisher'732 et al. (US Patent No. 6,398,732 B1), in view of Bonnefous'028 (US Patent No. 5,411,028) and further in view of Guracar'344 et al. (US Patent No. 6,030,344).

Claim 7/5/1: Brock-Fisher'732 and Bonnefous'028 fail to teach an envelope detecting section. However, Guracar'344 teaches envelop-detecting the ultrasonic reflected wave and an amplifying section for logarithm-amplifying an envelop-detected signal (Col. 8, Line 43-53). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order to remove undesirable high frequency variations (Col. 8, Line 46-47). Brock-Fisher'732 teaches the image data generating section generates image data (Figure 4, Element 59). Brock-Fisher'732 and Bonnefous'028 fail to teach the image data obtained by synthesizing a B-mode image. However, Guracar'344 teaches image data obtained by B-mode imaging and other combination of images thereof (Col. 8, Line 11-27). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-

Fisher'732, Bonnefous'028 and Guracar'344 in order to provide user selection (Col. 8, Line 19).

Claim 8/7/5/1: Brock-Fisher'732 teaches the ultrasonic probe driving but Brock-Fisher'732 and Bonnefous'028 fail to teach fail to teach the generating a third driving pulse suited to generate a B-mode image and envelope-detecting section. However, Guracar'344 teaches using multiple imaging modes and thus other driving pulses for imaging (Col. 8, Line 14-18). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order in order to provide user selection (Col. 8, Line 19). Guracar'344 teaches envelop-detecting the ultrasonic reflected wave and an amplifying section for logarithm-amplifying an envelop-detected signal (Col. 8, Line 43-53). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order to remove undesirable high frequency variations (Col. 8, Line 46-47).

2. Claim 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brock-Fisher'732 et al. (US Patent No. 6,398,732 B1) and further in view of Bonnefous'028 (US Patent No. 5,411,028).

Claim 10: Brock-Fisher'732 teaches a control method of an ultrasonic diagnostic apparatus (Figure 4, Element 50 & Col. 3, Line 53). Brock-Fisher'732 teaches having a transmitting/receiving section for transmitting/receiving an ultrasonic wave (Figure 4, Element 55 & Col. 3, Line 53-55). Brock-Fisher'732 teaches a phase-detecting section for phase-detecting the received ultrasonic wave (Figure 4, Element

70 & Col. 4, Line 21-26 & 38-42). Brock-Fisher'732 teaches a computing section (Figure 4, Element 64) and the phase-detected ultrasonic wave (Figure 4, Element 70 & Col. 4, Line 21-26 & 38-42). Brock-Fisher'732 fails to teach for computing a deformation amount and/or elastic module. However, Bonnefous'028 teaches obtaining the elastic moduli (Col. 3, Line 47-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to perform various calculations and realize very useful representations (Col. 2, Line 15-17). Brock-Fisher'732 teaches the step of transmitting an ultrasonic wave to an object to be measured including a blood vessel (Figure 2, Element 10, 12 & 14) a fluid portion in which fluid moves (Figure 4, Element 55 & Col. 3, Line 53-55) and receiving an ultrasonic reflected wave obtained when the ultrasonic wave reflects from the object to be measured (Figure 4, Element 55 & Col. 3, Line 61). Brock-Fisher'732 teaches the step of phase-detecting the ultrasonic reflected wave (Figure 4, Element 70 & Col. 4, Line 21-26 & 38-42). Brock-Fisher'732 teaches the step of a computing section (Figure 4, Element 64) and the phase-detected signal (Figure 4, Element 70 & Col. 4, Line 21-26 & 38-42). Brock-Fisher'732 fails to teach obtaining the velocities of the object to be measured at a plurality of measuring positions of the object to be measured and obtaining the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches obtaining velocities of the object to calculate deformation (Col. 1, Line 45 – Col. 2, Line 5) or elastic moduli (Col. 3, Line 47-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to perform

various calculations and realize very useful representations (Col. 2, Line 15-17). Brock-Fisher'732 teaches the step of determining a fluid portion in the object to be measured in accordance with the phase- detected signal (Col. 4, Line 38-48). Brock-Fisher'732 teaches the step of using information determined by the fluid determining section (Col. 5, Line 19-24). Brock-Fisher'732 fails to teach a two-dimensionally image- displaying the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches a two-dimensionally image- displaying the deformation amounts and/or elastic moduli of the object to be measured in a region other than the fluid portion by using the information determined by the fluid determining section (Col. 4, Line 40 – Col. 5, Line 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to produce images for examination of the patient (Col. 4, Line 52-54). However, Guracar'344 teaches at least one micro-region [spatial location] from the velocities and in a radius direction of the blood vessel, the micro-region defined by a portion of the object to be measured between at least two of the measuring positions (Figure 14A; Figure 10; Col. 5, Line 45-46 & Col. 14, Line 43-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order to provide an efficient metho0d for processing and displaying various ultrasound data (Col. 2, Line 15-16).

Claim 11/10: Brock-Fisher'732 teaches the fluid determining section (Col. 4, Line 38-48) but fails to teach a Doppler method. Bonnefous'028 teaches the Doppler method (Col. 8, Line 26-33). It would have been obvious to one of ordinary skill in the

art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 for the advantage of enabling broader use of the results and insensitive to the dispersion of the ultrasonic wave frequency used (Col. 8, Line 26-33).

Claim 12/11/10: Brock-Fisher'732 teaches a ultrasonic diagnostic apparatus control method of separating a frequency component higher than a predetermined value [threshold value] and a frequency component equal to or lower than the predetermined value [threshold value] from the phase-detected signal (Figure 4, Element 64 & 70, Figure 5, 112 & Col. 5, Line 6-18). Brock-Fisher'732 fails to teach obtaining the velocities of the object to be measured at a plurality of measuring positions of the object to be measured and obtaining the deformation amounts and/or elastic moduli between measuring positions of the object to be measured from the velocities. However, Bonnefous'028 teaches obtaining velocities of the object to calculate deformation (Col. 1, Line 45 – Col. 2, Line 5) or elastic moduli (Col. 3, Line 47-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to perform various calculations and realize very useful representations (Col. 2, Line 15-17).

Claim 13/11/10: Brock-Fisher'732 teaches the ultrasonic probe driving section generates a first driving pulse for the object to be measured (Figure 4, Element 55 & Col. 3, Line 53-55). Brock-Fisher'732 fails to teach obtaining the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches obtaining the deformation (Col. 1, Line 45 – Col. 2, Line 5) or elastic moduli (Col. 3, Line 47-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the

teachings of Brock-Fisher'732 and Bonnefous'028 in order to perform various calculations and realize very useful representations (Col. 2, Line 15-17). Brock-Fisher'732 teaches a second driving pulse suited to determine a fluid portion (Col. 2, Line 18-22). Brock-Fisher'732 fails to teach the Doppler method transmitted to the object to be measured. Bonnefous'028 teaches the Doppler method (Col. 8, Line 26-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 for the advantage of enabling broader use of the results and insensitive to the dispersion of the ultrasonic wave frequency used (Col. 8, Line 26-33). Brock-Fisher'732 teaches a signal obtained by phase-detecting an ultrasonic reflected wave obtained from the first driving pulse (Col. 2, Line 18-22 & Col. 4, Line 28-33). Brock-Fisher'732 fails to teach obtaining the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches obtaining the deformation (Col. 1, Line 45 – Col. 2, Line 5) or elastic moduli (Col. 3, Line 47-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to perform various calculations and realize very useful representations (Col. 2, Line 15-17). Brock-Fisher'732 teaches the fluid determining section (Figure 4, Element 70) determines the fluid portion in accordance with a signal obtained by phase-detecting an ultrasonic reflected wave obtained by the second driving pulse (Col. 2, Line 18-22 & Col. 4, Line 28-33).

Claim 14/10 & 15/10: Brock-Fisher'732 teaches the ultrasonic diagnostic apparatus control method for generating image data (Figure 4, Element 59 & 61 & Col.

5, Line 13-18). Brock-Fisher'732 fails to teach a two-dimensionally image- displaying the deformation amounts and/or elastic moduli. However, Bonnefous'028 teaches a two-dimensionally image- displaying the deformation amounts and/or elastic moduli of the object to be measured in a region other than the fluid portion by using the information determined by the fluid determining section (Col. 4, Line 40 – Col. 5, Line 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to produce images for examination of the patient (Col. 4, Line 52-54). Although Brock-Fisher'732 and Bonnefous'028 do not cite using gradation display or chroma display by name, Brock-Fisher'732 and Bonnefous'028 do teach displays of functional equivalence (Brock-Fisher'732 Col. 4, Line 44-45 & 52-54 & Bonnefous'028 Figure 4, Element 61 & Col. 4, Line 45-48 & Col. 5, Line 13-18). Brock-Fisher'732 teaches a second image obtained by displaying the fluid portion with a predetermined color and displaying a region other than the fluid portion with colorless transparence (Col. 4, Line 45-48 & Col. 5, Line 13-18). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to provide a means for review by the user (Brock-Fisher'732, Col. 5, Line 18). Brock-Fisher'732 fails to teach showing the deformation amounts and/or elastic moduli at positions. However, Bonnefous'028 teaches obtaining the deformation amounts (Col. 1, Line 45 – Col. 2, Line 5) and/or elastic moduli (Col. 3, Line 47-50) and forming a 2D image (Col. 4, Line 52). It would have been obvious to one of ordinary skill in the art to

combine the teachings of Brock-Fisher'732 and Bonnefous'028 in order to produce images for examination of the patient (Col. 4, Line 52-54).

3. Claim 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brock-Fisher'732 et al. (US Patent No. 6,398,732 B1), in view of Bonnefous'028 (US Patent No. 5,411,028) and further in view of Guracar'344 et al. (US Patent No. 6,030,344).

Claim 16/14/10: Brock-Fisher'732 and Bonnefous'028 fail to teach envelope-detecting. However, Guracar'344 teaches envelop-detecting the ultrasonic reflected wave and an amplifying section for logarithm-amplifying an envelop-detected signal (Col. 8, Line 43-53). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order to remove undesirable high frequency variations (Col. 8, Line 46-47). Brock-Fisher'732 teaches generates image data (Figure 4, Element 59). Brock-Fisher'732 and Bonnefous'028 fail to teach the image data obtained by synthesizing a B-mode image. However, Guracar'344 teaches image data obtained by B-mode imaging and other combination of images thereof (Col. 8, Line 11-27). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order to provide user selection (Col. 8, Line 19).

Claim 17/16/14/10: Brock-Fisher'732 teaches the ultrasonic probe driving but Brock-Fisher'732 and Bonnefous'028 fail to teach fail to teach the generating a third driving pulse suited to generate a B-mode image and envelope-detecting. However, Guracar'344 teaches using multiple imaging modes and thus other driving pulses for

imaging (Col. 8, Line 14-18). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order in order to provide user selection (Col. 8, Line 19). Guracar'344 teaches envelop-detecting the ultrasonic reflected wave and for logarithm-amplifying an envelop-detected signal (Col. 8, Line 43-53). It would have been obvious to one of ordinary skill in the art to combine the teachings of Brock-Fisher'732, Bonnefous'028 and Guracar'344 in order to remove undesirable high frequency variations (Col. 8, Line 46-47).

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Bor whose telephone number is 571-272-2947. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

hcb

BRIAN L. CASLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700